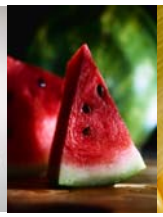




**Trout** is the common name given to many species of fresh water fish belonging to the salmon family. **Trout** are usually found in cool, clear streams and lakes, making Idaho the perfect habitat for them to grow. Idaho has over 16,000 miles of rivers and streams and more than 2,000 reservoirs and natural lakes! Although naturally distributed throughout North America, Idaho produces more **trout** than any other state. Idaho produces over 70% of the U.S. **trout** supply. The majority of Idaho **trout** are produced by highly efficient, integrated grower-processors.

**Idaho** raises mostly Rainbow **trout** for sale in the domestic and international market, but Idaho is home to many species of **trout** like Brown, Brook, Bull, Lake, and Grayling. Idaho is currently the only state in the country with a wild Golden **trout** population, which are found in a few high mountain lakes in the Sawtooths, Bitteroots, and Lemhis.

Some **trout** species can live for many decades and grow to more than 66lbs! They generally feed on soft bodied aquatic invertebrates, such as flies, mayflies, caddis flies, stoneflies, dragonflies or zooplankton. Larger specimens of **trout** prey almost exclusively on small fish, if they are available.

**Trout** has a delicate, special flavor itself or it can be enhanced with sauces or stuffings. It is also easy to handle and simple to prepare and the short cooking time makes it perfect to fit into busy schedules! **Trout** is low in calories and high in Omega-3 fatty acids, which have proven to lower cholesterol and blood pressure and reduce the risk of heart disease.

IDAHO PREFERRED









Activity Sheets
> Lesson Plans
School Products
Sample Letter

# Schools - Lesson Plans - Aquaculture


There are many different kinds of farms in the world. There are vegetable farms that grow beans, potatoes, and corn, orchard farms that grow apples, oranges, and pears, and animal farms that raise cows, pigs, horses, and sheep.But there's one kind of farm that's very unusual, because instead of fields for vegetables, or pens for animals the farmers raise their crops in acres and acres of water. And instead of cows and pigs, these farmers raise fish. You may have thought that all fish swim freely in the oceans, rivers, and lakes. But since ancient times, people have raised many different kinds of saltwater and freshwater fish and plants as food. This type of farming is called Aquaculture.Why do people raise fish on farms? For the same reasons they grow vegetables or raise cows and other farm animals: to feed hungry people, and make sure there is enough food all year 'round. If you've ever gone fishing you probably know that there are some times when you don't catch any fish at all, and other times when you can catch a bunch in one afternoon. When fish are raised at a fish farm there are always plenty of adult fish ready to "harvest" all the time. At a fish farm you can also control the temperature and condition of the water and control the food that the fish eat, so that the fish are always healthy and strong. Healthy fish taste best and are very nutritious to eat.In the United States several types of aquatic animals are raised on farms. Some are

saltwater fish and shellfish that live in the ocean like shrimp, clams and oysters. Others are freshwater fish that live in rivers and lakes like Rainbow Trout and catfish. Salmon and some kinds of trout live part of their lives in the ocean and part of their lives in rivers and streams. Their bodies can adapt to both salt and fresh water.Let's learn how Rainbow Trout are raised on a fish farm in southern Idaho. Here, in a special place called the Magic Valley, a hidden, underground reservoir of clean mountain water gushes right out of the walls of the Snake River canyon. Because the water spends most of its time underground, it's constantly filtered through volcanic rock, so when it flows out of the underground lake it's very pure and clean. Whether it's summer, winter, spring, or fall, the water always stays at 58º Fahrenheit, the ideal temperature for raising trout. That's the reason why over 75% of the Rainbow Trout grown in the United States come from this one valley in southern Idaho.Rainbow Trout begin their lives as eggs. The eggs are placed in upwelling incubators in indoor hatcheries. Here oxygen-rich water bubbles up around them. After 25 days, tiny eyes can be seen in the eggs. About ten days later they hatch into tiny fish called fry with a yoke sack still attached to their tails and are moved to indoor ponds. They get all the nutrition they need from their yoke sack. The expression "small fry" probably came from the name of these newly hatched fish.When the yoke sack is all gone and the fry are strong enough to swim up to the surface of the water on their own, they're called "swim-up fry." The swim-up fry are fed special food until they grow to about three inches long. At this stage they are about as long as a person's finger, and they're known as "fingerlings". Now they are old enough to be moved to outdoor raceways where they are carefully nurtured and fed for about eight months.What do farm-raised Rainbow Trout need to be healthy? Food: specially made fish food that is high in protein, nutritious fish oil, vitamins, and minerals. The water they swim in is also very important to their health and growth. It has to be very clean and pure, it has to be the right temperature, and it has to be full of oxygen. Just like humans fish need oxygen to live, but they don't have lungs for breathing air, as we do. They take oxygen out of the water, by filtering it through the gills in the sides of their heads. To make sure there is plenty of oxygen in the Rainbow Trout's water the water flows quickly through the raceways, adding tiny bubbles of air to it. This makes it easier for the fish to take the oxygen out of the water as it passes through their gills.With just the right amount of nutritious food and lots of clean aerated water, the trout grow bigger and

stronger. As they grow they are graded and sorted by size. Groups of fish of the same size are kept together, sort of like different age groups in this school. (That's because if you let the extra-big fish swim in the same tank as the extra-small fish, the big fish would eat the little fish.) When they weigh 12 to 16 ounces they are fully grown and ready to go to market.How can you tell a Rainbow Trout from a brown trout or any other type of trout? Rainbow Trout have a rosy pink coloring along the side and gill covering. Sometimes they can also have a blue or gold coloring. With all these shimmering colors their skin can look like a rainbow, and that's why they're called "Rainbow Trout." Actually, Rainbow Trout are like chameleons and can become darker or lighter depending on the color of the rocks and sand in the stream where they are swimming.Rainbow Trout will take on the color and taste of the water they're in. That's why it's important to have a pure spring water source. You may have eaten farm-raised Rainbow Trout before, right here in the school cafeteria. Kids love trout because it has a mild taste and is very tender and flaky. Rainbow Trout is also very nutritious. It's a great source of protein, which is a very important food group that people should eat every day. It's low in calories and fat, and full of importantvitamins and minerals.The scientists who study Rainbow Trout are always working to find better ways to grow strong, healthy fish so we all can enjoy them for lunch and dinner. They study the water they swim in, the food they eat and the way they are handled. The scientists use computers, microscopes, and other testing instruments to make sure all the Rainbow Trout you see at the school, or eat in restaurants or in the school cafeteria are fresh and good for you. Because they're raised on a farm, you can be sure the Rainbow Trout you eat has been raised in pure fresh water and treated with the best care. That's why it always tastes so good.

> Acquaculture

Suggested Activities



# Schools - Lesson Plans - Aquaculture Activities


**1.** Discuss the similarities and differences between agriculture and aquaculture.EG: Similarities may include:

- Raising plants and animals from babies (or seedlings) to adults.
- Controlling the environment, including temperature, water, and food.
- Creating a continuous supply of food by planting/hatching at various times.
- Using scientific methods to keep the harvest helthy and productive.
- Continually caring for the crop and protect in from harm.

Differences may include:

- Growing in water vs. in soil.
- Different food for land animals vs. fish.
- Horses, cows, sheep, etc., need to be kept warm and dry. Rainbow Trout love to be wet and cold.
- There are many more land-based farms than water-based farms, and they are scattered throughout the United States. Most trout farms are located in a small area of Southern Idaho.
- Horses, cows, etc. are born live. They're mammals. Fish hatch from eggs. (Explain the basic differences between mammals and fish, i.e. warm vs. cold bloodedness, breathe air with lungs vs. gills, etc.)

**2.** Using the Clear Springs Aquaculture Poster or the web site diagram, trace the life cycle of the Rainbow Trout as you read this lesson plan. Point out the various stages of the trout's life, starting with the egg and continuing through adulthood.

**3.** At the bottom of the poster or web site you'll see a picture of a Rainbow Trout with various parts annotated. Explain the various parts of the fish and their functions:

- Fins - A flap of skin used for moving and steering through the water.
- Tail - A flap of skin at the back of the fish, which it wiggles to move through the water.
- Gills - Breathing slits in the side of the fish's body that take oxygen from the water.
- Scales - Small shiny pieces of hard skin that protect the fish's body. Compared to other fish Rainbow Trout scales are smaller and more delicate.

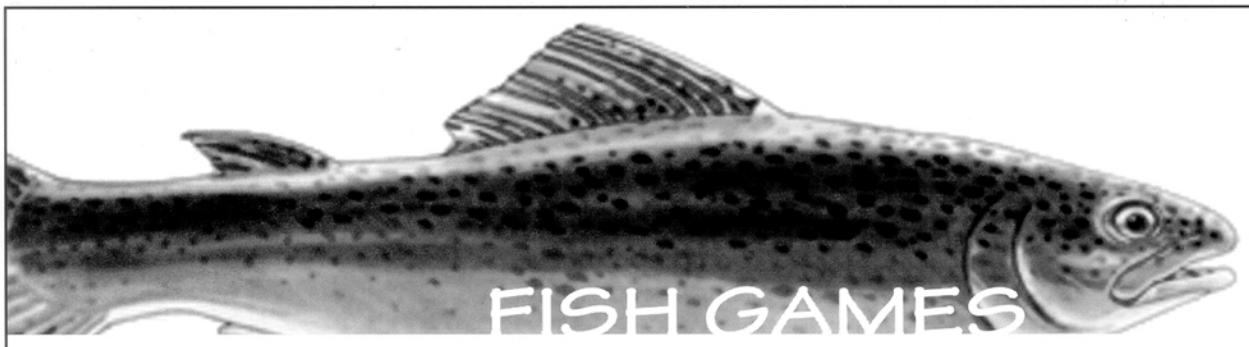
**4.** Begin a discussion about the fish-eating habits of the children. Ask how many of them eat fish at home. Have any of the children gone fishing? How did they prepare the fish for cooking? Did they cook the fish over a fire? How do their parents prepare fish at home?

**5.** Write new lyrics to Old MacDonald Had a Farm based on aquaculture and raising Rainbow Trout. Ask the class to help write the lyrics based on what they've used in this lesson and sing your new song together.

**6.** Ask the children to draw the various stages of a fish's life: egg, egg with eyes, fry, fingerling and adult.

Acquaculture

> Suggested Activities




# FISH GAMES

## A Tail of Two Trout

Tommy and Timmy were Rainbow Trout who grew up on a fish farm in
❑ Egypt ❑ Idaho ❑ New York.

They started out as
❑ eggs ❑ sprouts ❑ seeds.

When they grew to be the size of your finger they were known as
❑ fish sticks ❑ fishie babies ❑ fingerlings.

The water they lived in was
❑ salty ❑ warm ❑ cold and very pure and clean.

When they grew eyes and tails they were called
❑ pollywogs ❑ tadpoles ❑ fry.

**ANSWERS:** Idaho, eggs, fingerlings, cold and very pure and clean, fry

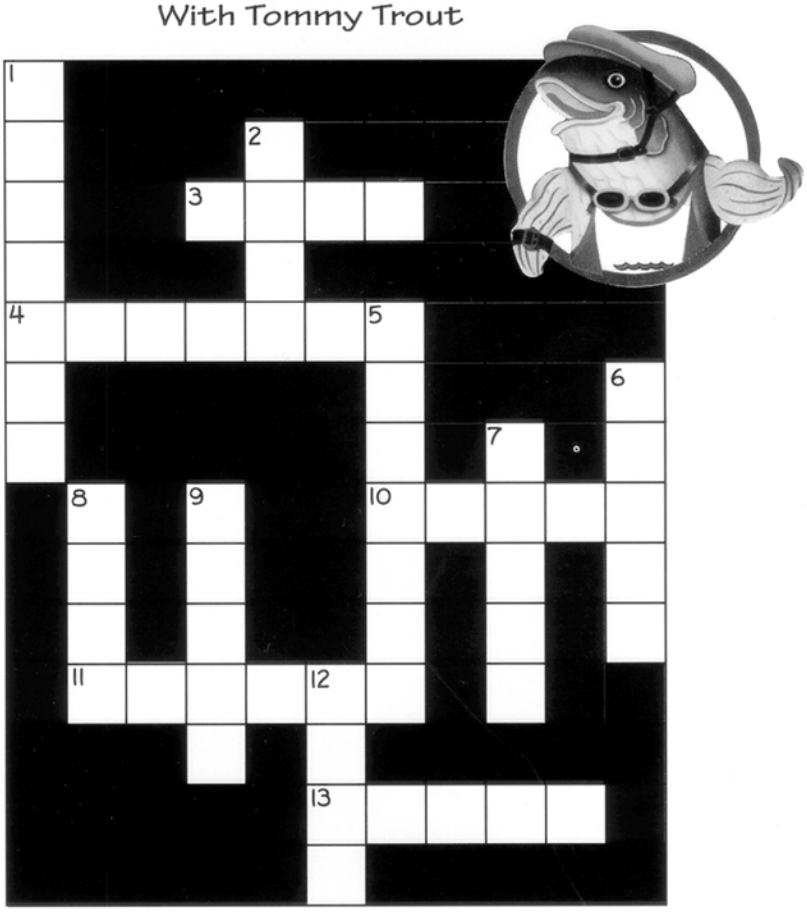
## Fish Funnies

1. How does a trout always know how much it weighs?
2. Where do fish love to go on vacation?
3. If fish could sing, what would be the highest note they could reach?
4. Did you know that fish never graduate?
5. How do fish say "Good-bye"?


**ANSWERS**
1. It brings its scales wherever it goes. 2. Finland. 3. High sea. ( High "C" ).
4. They spend their whole lives in school. 5. They don't. They just wave.

# FISHING FOR WORDS

With Tommy Trout



## ACROSS

3. A place where crops and fish are raised.
4. Tiny balls of air.
10. The state with the most fish farms.
11. Shiny fish skin.
13. Breathing slits.

## DOWN

1. All the colors of the _____.
2. Fish swish this to swim.
5. Places where water bubbles out of the earth.
6. A tasty, healthy type of fish.
7. Fish live in it.
8. Fish use them to steer when swimming.
9. See-through or transparent.
12. Fish lay them.

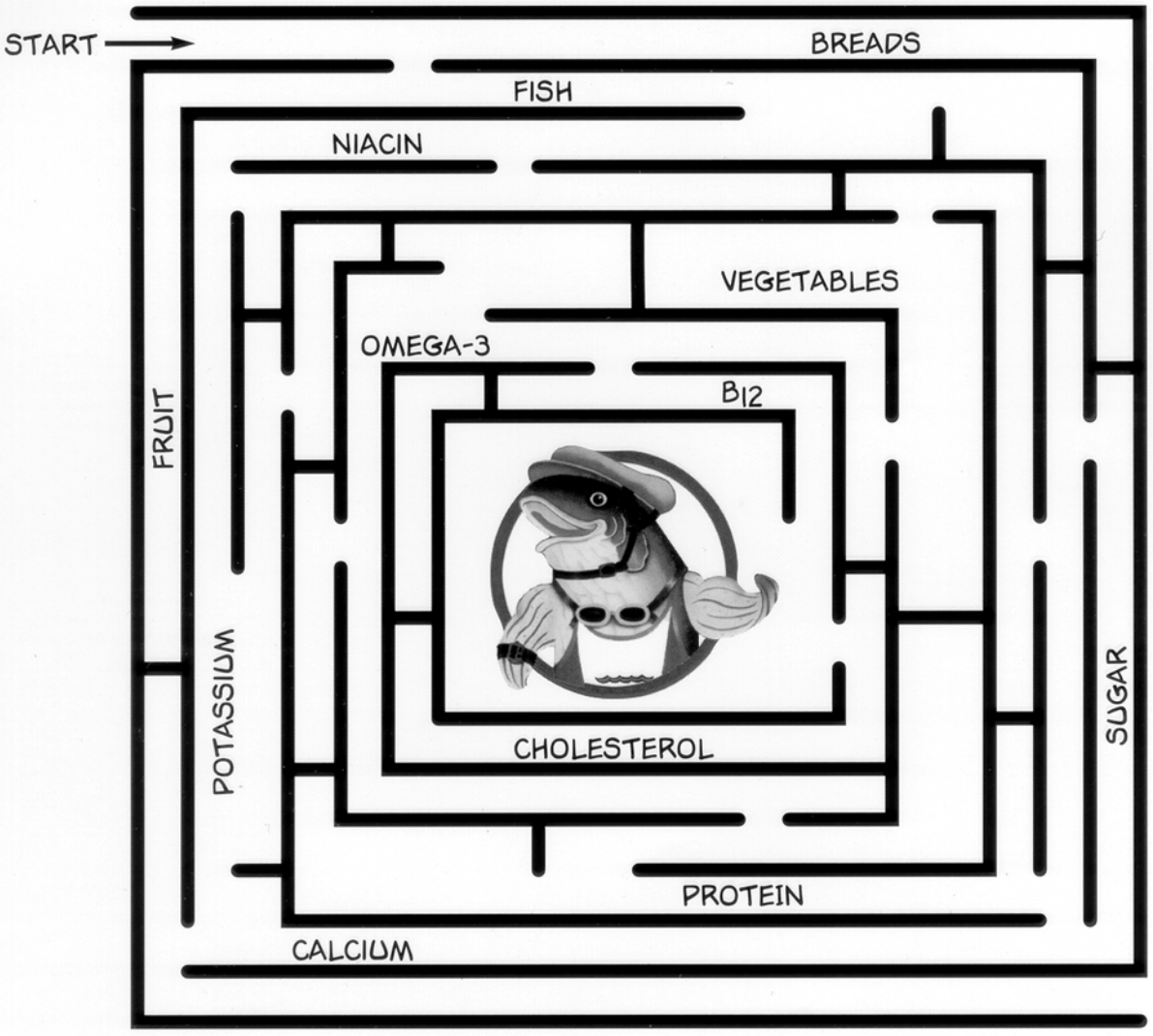
**ANSWERS** Across: 3. FARM 4. BUBBLES 10. IDAHO 11. SCALES 13. GILLS
Down: 1. RAINBOW 2. TAIL 5. SPRINGS 6. TROUT 7. WATER 8. FINS 9. CLEAR 12. EGGS

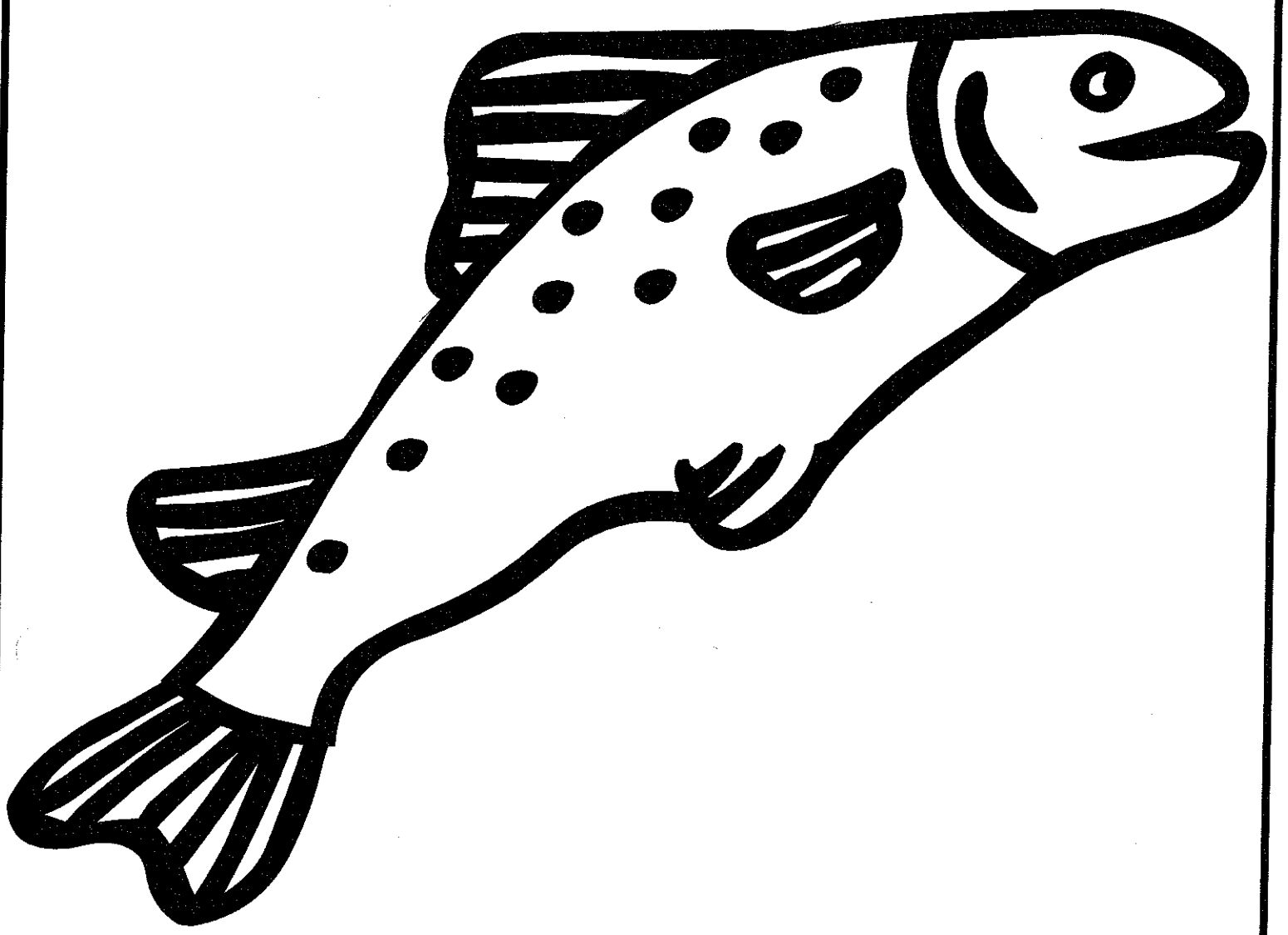
# GET TOMMY TROUT HOME

**Help Tommy Trout find his way through the River Maze**

Circle all the words you pass on your way through the maze.
These are some of the nutrients in Rainbow Trout.

Cross out the words that are not on the correct path.
These are not found in Rainbow Trout.





A fish

# FISH SONGS AND RHYMES

## I'm a Little Fishy

*Sung to I'm a Little Tea Pot*

I'm a little fishy,
I can swim.
Here is my tail,
Here is my fin.
When I want to have fun
With my friends,
I wiggle my tail and
Dive right in.

## Three Brook Trout

*Sung to Three Blind Mice*

Three brook trout
Three brook trout
See how they swim
See how they swim.
Their tails go left and
Their tails go right,
Their gills breathe in and
Their gills breathe out,
Did you ever see
Such as slippery sight as
Three brook trout?

# Five Little Fishies

*Cut five fish shapes out of felt. Place the shapes on a flannel board. As you read the poem below, let the children take turns "catching" the fish by removing them from the flannel board.*

Five little fish swimming by the shore.
One got caught, and then there were four.

Four little fish swimming in the sea.
One got caught and then there were three.

Three little fish swimming in the blue.
One got caught and then there were two.

Two little fish swimming in the sun.
One got caught and then there was one.

One little fish swimming for home
Decided it was best never to roam.